



COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
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Commissioner

PILOTING APPROVAL
Pursuant to Title 5, 310 CMR 15.000

Name and Address of Applicant:

Technology Transferred to:

Lombardo Associates Inc.
49 Edge Hill Road
Newton, MA 02467

From: Wastewater Science, Inc.
210 Glengrove Place
Waterloo, Ontario N2L4W2

Trade name of technology and model numbers: Nitrex Filters (500, 600, 700, and 900 gpd design flow) and Nitrex-Plus (160 and 350 gpd design flow) (hereinafter the "System").

Date of Application: October 30, 2000
Transmittal Number: W016578
Date of Issuance: September 4, 2001, Revised March 30, 2004
Date of Expiration: September 4, 2006

Authority for Issuance

Pursuant to Title 5 of the State Environmental Code, 310 CMR 15.000, the Department of Environmental Protection hereby transfers this Approval to: Lombardo Associates Inc., 49 Edge Hill Road, Newton, MA (hereinafter "the Company"), to Pilot in the Commonwealth of Massachusetts the System described herein. Sale and use of the System are conditioned on and subject to compliance by the Company and the System owner with the terms and conditions set forth below. Any noncompliance with the terms or conditions of this Approval constitutes a violation of 310 CMR 15.000.

Signed
Glenn Haas, Director
Division of Watershed Management
Department of Environmental Protection

March 30, 2004
Date

I. Purpose

1. The purpose of this Approval is to provide field testing and technical demonstration of the System in Massachusetts, on a Piloting Approval basis, so as to evaluate whether the System can function effectively.
2. With the necessary permits and approvals required by 310 CMR 15.000, this Pilot Approval authorizes the use and installation of the System in Massachusetts, and requires testing so that the Department can determine whether the System consistently can demonstrate the ability to reduce total nitrogen ($TN = TKN + NO_3 + NO_2$) to less than 10 mg/L.
3. The System may only be installed on facilities that meet the criteria of 310 CMR 15.285(2).

II. Design Standards

1. The Nitrex Filter consists of nitrate-reactive media, formulated from wood by-products, contained in a concrete tank. Pretreatment is required to nitrify the effluent. The pre-treated effluent then percolates through the reactive media. The cycle is repeated once or multiple times and the effluent is discharged to the soil absorption system. A schematic of the System is attached to this Approval.

The Nitrex-Plus consists of a concrete tank in which the top half of the tank is filled with coarse, washed filter sand (1-2 mm diameter) and the bottom half is filled with the reactive media. Septic tank effluent flows through the sand into the media. The treated effluent is discharged to the soil absorption system.

2. When a Nitrex Filter is used, the System shall be installed in series between another approved I/A technology, which nitrifies the effluent and the soil absorption system of a standard Title 5 system constructed in accordance with 310 CMR 15.100 – 15.279, subject to the provisions of this Approval.

When a Nitrex-Plus is used, the System shall be installed in series between the septic tank and the soil absorption system of a standard Title 5 system constructed in accordance with 310 CMR 15.100 – 15.279, subject to the provisions of this Approval. Units may be used in parallel to accommodate larger design flows.

3. In accordance with 310 CMR 15.217(2), an increase in calculated allowable nitrogen loading per acre is allowed for facilities, with the use of the System in areas subject to nitrogen loading limitations, under 310 CMR 15.214. When used in such areas:
 - i. for residential facilities with a design flow less than 2,000 gallons per day (gpd), the design flow shall not exceed **660** gallons per day per acre (gpda),

- ii. for non-residential facilities with a design flow less than 2,000 gpd, the design flow shall not exceed **550** gpda,
 - iii. for all facilities with design flows 2,000 gpd or greater, the design flow shall not exceed **440** gpda.
4. These limitations are based on the maximum nitrogen loading rate credit of a technology with Certification for General Use. If Systems need to be replaced, there will be an approved technology available.

III. General Conditions

- 1. No more than 15 Systems may be installed under this Approval. A representative of the Company shall be onsite to inspect and approve each System installation.
- 2. All provisions of 310 CMR 15.000 are applicable to the use of this System, the System owner and the Company, except those that specifically have been varied by the terms of this Approval.
- 3. Any required operation and maintenance shall be performed in accordance with a Department approved plan. Any required sample analysis shall be conducted by an independent U.S. EPA or DEP approved testing laboratory, or a DEP approved independent university laboratory. It is a violation of this Approval to falsify any data collected pursuant to an approved testing plan, to omit any required data or to fail to submit any report required by such plan.
- 4. The following table lists the monitoring requirements for Systems installed under this Approval. The following parameters shall be monitored: pH, biochemical oxygen demand (BOD₅), total suspended solids (TSS), alkalinity, and TN. All monitoring data shall be submitted to the Department and local approving authority within 30 days of the sampling date.

Facility Type	Design Flow (gpd)	Stream	Frequency	Sample Type
Residential	< 2,000	Effluent	Monthly for at least the first six months, quarterly thereafter	Grab
Residential	≥ 2,000	Influent & Effluent	Monthly for at least the first 18 months,	composite*
Non-residential	All	Influent & Effluent	Monthly for at least the first 18 months,	composite*

*Unless otherwise specified by the Department, composite shall be determined based on facility operation

- 5. The facility served by the System and the System itself shall be open to inspection and sampling by the Department and the local approving authority at all reasonable times.

6. In accordance with applicable law, the Department and/or the local approving authority may require the owner of the System to cease operation of the system and/or to take any other action as it deems necessary to protect public health, safety, welfare and the environment.
7. The Department has not determined that the performance of the System will provide a level of protection to public health and safety and the environment that is at least equivalent to that of a sewer system. Accordingly, no System shall be installed, if it is feasible to connect the facility to a sanitary sewer, unless as allowed by 310 CMR 15.004.
8. Design and installation of the System shall be in strict conformance with the Company's DEP approved plans and specifications, 310 CMR 15.000 and this Approval.

IV. Conditions Applicable to the System Owner

1. The System is approved in connection with the discharge of sanitary wastewater only. Any non-sanitary wastewater generated or used at the facility served by the System shall not be introduced into the System and shall be lawfully disposed of.
2. Operation and Maintenance plan and agreement:
 - i. Throughout its life, the System shall be under an operation and maintenance (O&M) agreement. The first O&M agreement shall be for at least 18 months with the Company or its licensed agents. Each subsequent O&M agreement shall be for at least one year.
 - ii. No System shall be used until an O&M plan is submitted to the Department and the local approving authority which:
 - a. provides for the contracting of a person or firm competent in providing services consistent with the System's specifications and the operation and maintenance requirements specified by the designer and any specified by the Department;
 - b. contains routine O&M activities specified by the Company necessary for proper operation of the System;
 - c. contains procedures for notification to the Department and the local approving authority within five days of a System failure or alarm event and for corrective measures to be taken immediately;
 - d. provides the name of an operator, which must be a Massachusetts certified operator as required by 257 CMR 2.00, that will operate and monitor the System:
 - for a System serving a facility with a design flow less than 2,000 gpd, the operator must operate and maintain the System at the frequency specified in Section III item 4 and anytime there is an alarm event;
 - for a System serving facility with a design flow of 2,000 gpd or greater, the operator must operate and maintain the

System at least monthly and anytime there is an alarm event; and

- d. contains an agreement to monitor the System for at least the first 18 months as described in Section V, items 5 through 9.
3. After the first 18 months of operation, if the System is approved as acceptable by the Department, the owner shall sign at least a one year agreement with any individual or firm with a Massachusetts certified operator of the appropriate grade.
 - i. Effluent discharge limits shall remain as prescribed in Section V, item 6. Should the System exceed the applicable TN limit on two consecutive sampling events, the owner shall have the person or firm contracted to monitor the System submit within 60 days a report to the Department on the reasons for the exceedances with recommendations of how future violations will be prevented.
 - ii. The owner shall submit monitoring data and O & M inspection results to the Department and the local approving authority within 30 days of each sampling date and each inspection date. The inspection results must be recorded on a DEP approved inspection form and a technology checklist, copies of which are attached to this Approval. The forms must be completed by the System operator.
 - iii. The owner may request, in writing, a change in the monitoring requirements from the Department.
4. The owner of the System shall at all times have the System properly operated and maintained in accordance with the Company's and the designer's operation and maintenance requirements and this Approval.
5. Anytime the operator is changed, within seven days of such change, the owner shall notify the Department and the local approving authority in writing and submit a copy of the new agreement to operate and monitor the System.
6. The owner shall furnish the Department any information, which the Department may request regarding the System, within 21 days of the date of receipt of that request.
7. The owner of the System shall provide a copy of this Approval, prior to the signing of a purchase and sale agreement for the facility served by the System or any portion thereof, to the proposed new owner.
8. Prior to installation of the System, the proposed owner shall submit to the Department the written approval of the local approving authority, together with a copy of the complete application submitted to the local approving authority and a complete BRP WP 64b application and obtain DEP written approval.
9. The owner shall record in the appropriate registry of deeds a notice that discloses the existence of this Pilot Use approved alternative system and the involvement of the Department in the approval of the system. Prior to the local approving authority's issuance of a Certificate of Compliance for the system, the owner shall

both record the notice in the registry and submit to the Department and the local approving authority the book and page number of the recording.

10. Within fourteen days of the local approving authority's issuance of the Certificate of Compliance, the owner shall submit a copy of the Certificate of Compliance to the Department.

V. Conditions Applicable to the Company

1. By January 31 of each year, the Company shall submit to the Department a report, signed by a corporate officer, general partner or Company owner, that contains information on the System, for the previous calendar year. The report shall state: the number of units of the System sold for use in Massachusetts during the previous year; the address of each installed System, the owner's name and address, the type of use (e.g. residential, commercial, school, institutional), and the design flow; and for all Systems installed since the date of issuance of this Approval for the System, all known failures, malfunctions, and corrective actions taken and the date and address of each such event.
2. The Company shall notify the Director of the Watershed Permitting Program at least 30 days in advance of the proposed transfer of ownership of the technology for which this Approval is issued. Said notification shall include the name and address of the proposed new owner and a written agreement between the existing and proposed new owner containing a specific date for transfer of ownership, responsibility, coverage and liability between them. All provisions of this Approval applicable to the Company shall be applicable to successors and assigns of the Company, unless the Department determines otherwise.
3. The Company shall furnish the Department any information that the Department requests regarding the System, within 21 days of the date of receipt of that request.
4. Prior to its sale of the System, the Company shall provide the purchaser with a copy of this Approval. In any contract for distribution or sale of the System, the Company shall require the distributor or seller to provide the purchaser of the System, prior to any sale of the System, with a copy of this Approval.
5. For at least the first 18 months of operation, the Company shall be responsible for operating, maintaining and monitoring the Systems in accordance with Section III, item 4 of this Approval.
6. The TN concentration in the effluent discharged from the System shall not exceed i.) 19 mg/L for Systems serving residential facilities with design flows less than 2,000 gpd; and ii.) 25 mg/L for Systems serving residential facilities with design flows of 2,000 gpd or greater and all Systems serving non-residential facilities.
7. During the first 18 months of operation, excluding the first three months of startup operations, if the effluent concentration from the System exceeds the applicable TN limit on two consecutive sampling events, the Company shall within 60 days submit a report to the Department explaining the reasons for the exceedances

with recommendations for operational or design changes to prevent future violations.

8. For at least the first 18 months of operation of each System, the Company shall be responsible for submitting monitoring data and O & M inspection results to the Department and the local approving authority within 30 days of each sampling date and each inspection date. The inspection results must be recorded on a DEP approved inspection form and a technology checklist, copies of which are attached to this Approval. Accurate completion of the forms shall be the responsibility of the Company.
9. Within 30 days of the end of the first 18 months of operation the Company shall submit a summary report on each system describing the operations of the system, any changes in operation or design that were made during the Piloting period, the final results of the Piloting program for that system and whether the system met the effluent limits for the previous 12 months of operation. That report shall also include either recommendations for approving and ending the Piloting program for that system or recommendations for continuing Piloting for any system that has not performed as planned.
10. The Department will review the report in item 9 above and determine if additional Piloting of the system is required. The Company shall either continue the Piloting program for that system as required by the Department or remove the system and replace it with a fully complying Title 5 system. If the Department determines that the system has performed at the relevant level for at least 12 months, the Company can turn the responsibility for operation and monitoring of the system over to the owner in accordance with Section IV, item 3 of this Approval.
11. If the Company wishes to continue this Piloting Approval after its expiration date, the Company shall apply for and obtain a renewal of this Approval. The Company shall submit a renewal application at least 180 days before the expiration date of this Approval, unless permission for a later date has been granted in writing by the Department.

VI. Reporting

1. All notices and documents required to be submitted to the Department by this Approval shall be submitted to:
Director
Watershed Permitting Program
Department of Environmental Protection
One Winter Street - 6th floor
Boston, Massachusetts 02108

VII. Rights of the Department

1. The Department may suspend, modify or revoke this Approval for cause, including, but not limited to, non-compliance with the terms of this Approval, non-payment of the annual compliance assurance fee, for obtaining the Approval

by misrepresentation or failure to disclose fully all relevant facts or any change in or discovery of conditions that would constitute grounds for discontinuance of the Approval, or as necessary for the protection of public health, safety, welfare or the environment, and as authorized by applicable law. The Department reserves its rights to take any enforcement action authorized by law with respect to this Approval and/or the System against the owner, or operator of the System and/or the Company.

VIII. Expiration date

1. Notwithstanding the expiration date of this Approval, any System sold and installed prior to the expiration date of this Approval, and approved, installed and maintained in compliance with this Approval (as it may be modified) and 310 CMR 15.000, may remain in use unless the Department, the local approving authority, or a court requires the System to be modified or removed, or requires discharges to the System to cease.